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ABSTRACT

This booklet presents findings of a study that examined the link between state education spending and economic development. Chapter 1 defines economic development and identifies principles of successful economic development. Chapter 2 examines in what way education (described in terms of human capital) is important to economic development and how this is known. The third chapter examines the link between education spending and economic development and describes how education spending has been shown to have a positive impact on a variety of economic outcomes, including jobs and earning. Chapter 4 explores the important relationship between education spending and student achievement by looking at both sides of the debate over whether "money matters." The economic-development consequences of acting as though money did not matter are examined in the fifth chapter. Chapter 6 presents the conclusion that increased spending on education can have a significant impact on a city's, region's, or state's economy, if done properly, and suggests ways that states can make education investments to achieve this impact. The conclusion is that simply investing more money in education--without changes in the way education dollars are spent--will not alone lead to greater student outcomes. Economic spending must be increased, especially in poor districts, if all students are to be provided with equal opportunities to learn the skills required for success in the new economy. Cities and states can make wise choices by looking at education spending as one of the most critical investments in long-term economic health. Two figures are included. (LMI)

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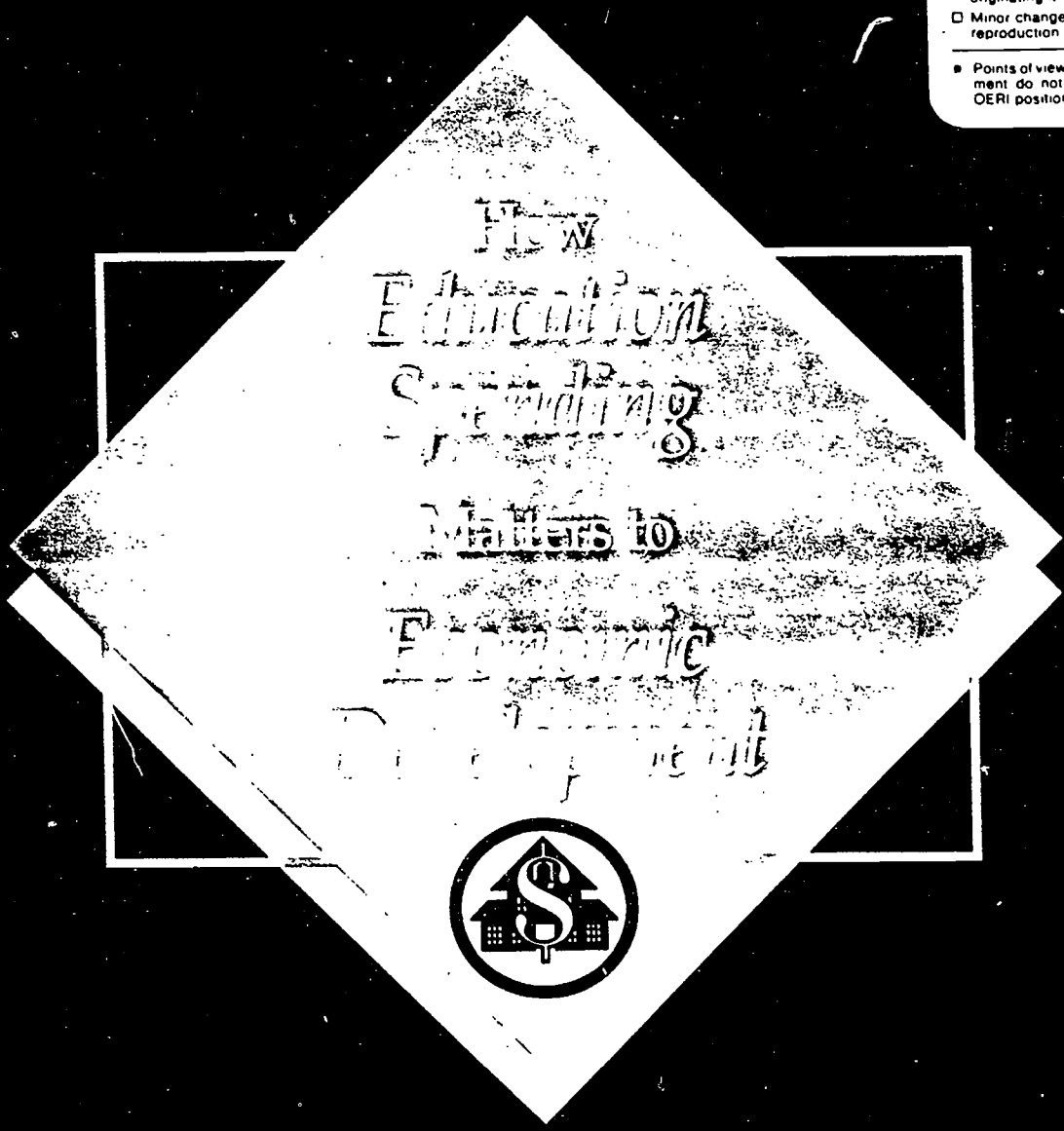
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How
*Education
Spending*
Matters to
*Economic
Development*



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NATIONAL EDUCATION ASSOCIATION
Research Division



FOREWORD

This study, prepared for the National Education Association by the Corporation for Enterprise Development, examines the linkage between state education spending and economic development. What follows is an exploration—using economic development “lenses.” It examines new research frontiers, which we as an Association may not have touched upon and which may, in some cases, run counter to our traditional way of thinking.

In examining the linkage between education spending and economic development, the research may also link education finance and education performance. Consider for a moment what is taking place in this area:

- State legislatures are mandating education performance.
- The public approves of required standards of education performance.
- Experts see improved education performance as a way to increase education funding.
- Private companies are guaranteeing education performance for a fee.
- Goals 2000 sets standards for student learning and evaluation.

The purpose of this research report is to stimulate thinking and explore new ways to enhance education funding and the work of our members—keeping in mind that we face extraordinary circumstances in the area of education finance.

Ron Henderson
Director, NEA Research



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INTRODUCTION

Legislators have long struggled with the allocation of limited resources. The classic formulation of this dilemma is the "guns vs. butter" trade-off. In our era, the challenge of resolving these trade-offs persists and is made all the more complicated by tight budgets and a growing anti-tax sentiment that was, in part, responsible for the Republican Party's stunning victory in the 1994 mid-term elections. Yet, what happens when, faced with these pressures, states cut taxes and curtail spending on essential services, such as education, human services, and infrastructure? California provides a good example:

California is at a crossroads. Over the past 20 to 30 years, there has been a profound state disinvestment in such areas as education and infrastructure, where sufficient public investment is a necessary underpinning for a strong private sector. California has slid from its post World War II position as a leader among the states in human resource and infrastructure investment to its current status as a state whose public investments are distinctly sub-par. . . . The average amount California spends to educate each student fell from 21 percent *above* the average in all other states in the school year 1959-60 to three percent points *below* the average in 1989-90. The recent fiscal crisis accelerated this trend, lowering per-pupil spending in California in 1992-93 to 14 percent below the average spent in other states. . . . By 1990, the average California class was the second largest in the nation and nearly one-third larger than the national average. . . . Indicators of the quality of education in California raise concerns. The state has the ninth lowest high school graduation rate in the country, and California students in the fourth and eighth grades rank below the national average on math achievement tests.¹

Yet, resource shortfalls such as these come at a time when our knowledge-based economy

demand a different and higher set of skills than those traditionally provided by public education and when increasing numbers of our public school students are minorities or new immigrants. While simple justice has always demanded that race or family background not serve as a predictor of educational achievement—that each student attain what his or her individual potential permits—the demand for skilled workers in a successful America of the coming decade now makes this objective an economic necessity. Unless more economically disadvantaged youngsters enter the work force with skills in proportion to their more affluent peers, we will not be able to achieve the level of work force skills required to be a high-wage, Information Age economy.

The purpose of this paper is to examine more closely the connection between education spending and economic development. In doing this, we will explore the issue from a variety of angles and draw some conclusions that will be helpful to an audience not necessarily versed in the intricacies of economic development. In other words, this is an "issue brief" that provides educators, policy makers, legislators, and citizens with a better understanding of the relationship between education spending and economic development. In the end, we hope to show that a state's or region's economic health is best served by a common sense view that seeks out a "middle way" between two extremes—one a simplistic interpretation that money does not matter, the other a naïve conclusion that money is everything.

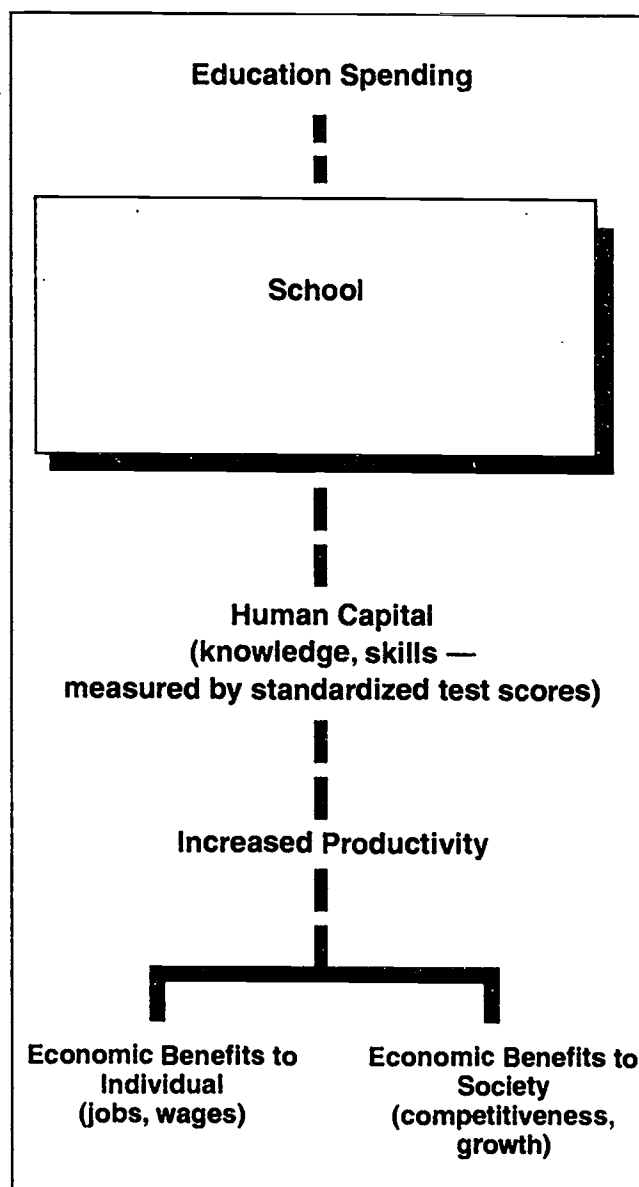
The Corporation for Enterprise Development's (CFED) interest in education stems from education's standing as one of the primary building blocks of economic health. The analytical

¹From Iris Lav, Edward Lazere, and Jim St. George, *A Tale of Two Futures: Restructuring California's Finances to Boost Economic Growth*, Center on Budget and Policy Priorities, April 1994.

framework of our annual *Development Report Card for the States*, one of the most widely used benchmarking tools for measuring state economic performance, is based on the assumption that investment for the long term in technology, physical infrastructure, appropriate financial resources, and *education* are the building blocks for sustained economic health. Thus, what follows is an exploration—using economic development “lenses”—of the connection between education spending and economic development.

Yet, the connection between the two is not a direct one, but rather one which involves a series of complex interrelationships (see Figure 1). Therefore, this issue brief explores the link between education spending and economic development from a number of different angles. We begin with a discussion of economic development—what it is and what some of the principles of successful economic development are. Then we examine in what way education (described in terms of human capital) is important to economic development and how we know this. We examine the link between education spending and economic development and describe how education spending has been shown to have a positive impact on a variety of economic development outcomes, including jobs and earnings. Following this, we explore the important relationship between education spending and student achievement by looking at both sides of the debate over whether “money matters.” Then we return to the relationship between education spending and economic development and examine the economic development consequences of acting as if money does not matter. Finally, we present our conclusion that increased spending on education can have a significant impact on a city’s, region’s or state’s economy, if done properly, and suggest ways that communities can make education investments to achieve this impact.

Figure 1 The Education Spending/Economic Development Link



WHAT IS ECONOMIC DEVELOPMENT?

At its most basic, economic development is the process by which wealth is created—or how a society increases its level of material and social well-being over time. In a developing economy, employment increases, incomes rise, innovation occurs, and the rate of economic growth rises.

Yet economic development is more than just growth; it also implies changes in technology and in the institutions controlling production. This includes a rise in entrepreneurship, the development of skilled labor, the building of roads and transportation facilities, the creation of financial institutions, and the channeling and accumulation of savings. Together, these advances allow an economy to increase its productivity, thereby enabling the production of more outputs with fewer inputs over the long haul.

Moreover, in today's new economy, the real agenda for development is to achieve a widely shared and sustainable quality of life. "Shared growth" means that there is broad distribution of opportunities for meaningful participation in the economy and enjoyment of the benefits of an increased standard of living. This also ensures that no one group in our society will act as a drag on growth. "Sustainable growth" means that the above goals are achieved in a manner that does not detract from—but rather enhances—the economy's ability to accomplish the same goals in the future.

By looking at the challenge in this way, there is no inherent conflict between business, social, and environmental goals. After all, standard of living comprises a number of dimensions—both material and nonmaterial, quantitative as well qualitative. Thus, economic development has to do with the flow of money and goods to individuals over time. But it also includes improvements in the quantity and quality of public goods, that is, in our ability to obtain goods that cannot be purchased directly, but are necessary to most peo-

ple's sense of well-being. These "goods" include clean air and water, freedom from fear of crime, and a sense of community.

Unfortunately, much of what goes on in the name of development is not driven by such a framework. Faced with economic dislocation caused by continued corporate downsizing, stubbornly high unemployment, and fear of job security even on the part of those in the work force, many political leaders have taken unwise actions that equate economic development solely with lowering taxes and rolling back government. This traditional approach to economic development often ends up being "penny wise and pound foolish." A more effective economic development approach is guided by the following principles:

■ *Strong economies compete on the basis of high value, not low cost.*

While at one time developing countries based their development on low wage rates, quality and other non-cost factors are the new turf for business competition. According to author Peter Drucker, "the main competition for American manufacturing industry—for instance, in automobiles, in steel and in machine tools—has come from countries such as Japan and Germany, where wage costs have long been equal to, if not higher than, those in the United States. The comparative advantage that now counts is in the application of knowledge."²

This is not to say that business costs—such as wages, taxes, energy rates, and social insurance premiums—do not matter at all to investors selecting a plant or office location. It is to say that what matters to investors is not how low those

Peter F. Drucker. "Knowledge Means Jobs," The Raleigh News and Observer, November 15, 1994 (excerpted from an article in The Atlantic Monthly).

rates are, but rather how much they buy in the benefits—such as a skilled labor force, nearness to markets, infrastructure capacity, and good quality of life—central to a firm's success.

In short, the relevant context to use when comparing business costs is value, not cheapness.³ Cheaper is only better when the benefits offered by competing locations are the same. Indeed, companies desire the most profitable location, not the least expensive one.

■ *Government is an essential partner in the development process.*

It is commonly held that the private marketplace is the best producer of the resources our people and companies require to be internationally competitive. But the private marketplace, however efficient, needs some resources and institutional relationships that can best be produced and organized with public involvement.

In some cases the private sector does not provide a needed service or product because, despite the need for it, the private sector cannot claim all the value from providing the good. Roads are one such example—the private sector needs roads to ship its goods to consumers, yet private firms are not in a position to provide a network of roads themselves. In other cases, private businesses may be focusing on narrow interests or specialties and thus miss new product or institutional

alliance opportunities. In both of these instances, government, because of its larger perspective, is in a unique position to organize the production of "public goods" or to bring interested parties to the table to help forge new alliances.

■ *There is no inevitable conflict between equity and efficiency.*

Although some would argue that, when it comes to development, cities and states must choose between economic growth and equity, the two are not mutually exclusive. Other world-class economies achieve high Gross National Product growth rates with much less income inequality than the United States, and with more social benefits—such as more available and less expensive health care, child care, and education. For example, when compared to the six largest Organization for Economic and Cooperative Development (OECD) countries and Sweden, the United States ranked second lowest in social welfare spending in 1990 and also ranked second lowest in annual per capita growth between 1979 and 1989. The two countries that ranked highest in social welfare spending in 1990 (France and Sweden) grew as fast as or faster than the United States during the same period.⁴

In a recently published book entitled *Growth with Equity*, Brookings Institution economists Martin Baily, Gary Burtless, and Robert Litan maintain, "There are good reasons to believe that appropriate policies for raising economic growth and improving the distribution of economic rewards are inextricably intertwined."⁵ For example, Baily, Burtless, and Litan point out that the economy can grow faster if workers with the least skills—often those with the lowest incomes—receive training to improve their skills. In addition, devoting resources to serious social problems that put a drag on the economy, such as drug abuse, crime, and lack of access to medical care, will also

³For more on the importance of quality, innovation, and other "higher order" advantages as sources of competitive advantage, see Michael E. Porter, *The Competitive Advantage of Nations* (New York: The Free Press, 1990).

⁴Gary Burtless, "Public Spending on the Poor: Historical Trends and Economic Limits," in *Confronting Poverty: Prescriptions for Change*, ed. Sheldon Danziger, Gary Sandefur, and Daniel Weinberg (Cambridge, MA: Harvard University Press, 1994), 80-81.

⁵Martin Neil Baily, Gary Burtless, and Robert F. Litan, *Growth with Equity: Economic Policymaking for the Next Century* (Washington, D.C.: The Brookings Institution, 1993), 4.

help the economy to grow faster. In other words, economic competitiveness is enhanced by creating greater opportunity for all members of society to participate in the economy.

■ Investments in development "capacity" (human, technological, financial, and infrastructure resources) provide the basis for future economic health.

Every year, CFED's *Development Report Card for the States* compares the economies of the 50 states and examines to what extent each state provides its citizens with economic benefits and opportunities. One of the key findings from CFED's 1994 *Development Report Card for the States* was that a state's economic performance is highly correlated to its past investments in "development capacity" (investments in human, financial, technological, and infrastructure resources). Of the eleven states with the highest grades in development capacity⁶ from the 1990 report card, all but three (73%) received an A or B in economic performance⁷ in the 1994 report card and none received a D or F. The reverse is true for the ten states that received the worst grades in development capacity in the 1990 report card—all but three states received a D or F on economic performance in the 1994 report card and none attained either an A or B (see Figure 2).⁸

In addition to the evidence from CFED's

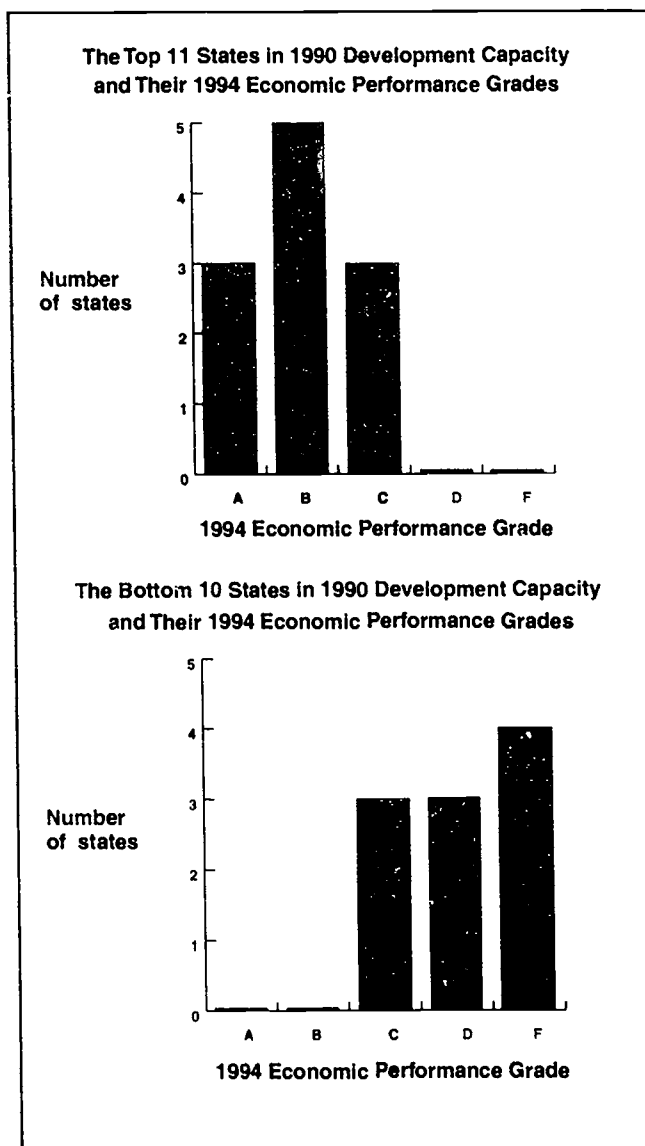
⁶The Development Capacity Index is made up of 24 measures, grouped into four subindexes: human resources (including high school graduation and college attainment), technology resources (including Ph.D. scientists and engineers in the work force and patents issued), financial resources (including commercial bank deposits and venture capital investments), and infrastructure and amenity resources (including highway quality measurements and energy cost).

⁷The Economic Performance Index is a benchmark for state economic performance and evaluates the extent to which a state's economy provides its citizens with economic benefits and opportunities for growth. The Economic Performance Index consists of 11 individual measures gathered into three subindexes: the Employment Subindex, the Earnings and Job Quality Subindex, and the Equity Subindex.

⁸While the data that support this finding are not strong enough to suggest, in any sense, that investments in development capacity "cause" high economic performance grades (the relationship may be the reverse), it demonstrates a strong relationship, nonetheless.

Development Report Card, more scholarly research on the economic impact of investments in public services and infrastructure has come to similar conclusions. For example, a recent study by researcher Alicia Munnell of the Federal Reserve Bank of Boston found that states that have invest-

Figure 2. Development Capacity and Future Economic Performance



ed more in public infrastructure (including education) tend to have greater output, more private investment, and more employment growth. Specifically, Munnell's research finds that "\$1000 more of public infrastructure per capita in the initial period contributes roughly 0.2 percent to the average annual rate of employment growth."⁹

Moreover, in a review of 30 business location studies conducted since 1979 that include some measure of investment in public services, researcher Timothy Bartik found that 60 percent of the studies had at least one public service variable that demonstrated a positive and statistically significant effect on business growth.¹⁰ What's more, while most studies of public services and economic development provide little information to indicate what would happen if taxes were increased to pay for an expansion in public services, Bartik addresses this question as well. He notes that three particular studies (including Munnell's study cited above) provide evidence that "state and local business tax increases, if used for particular public services, will encourage more business activity."¹¹

⁹Alicia H. Munnell (with Leah M. Cook), "How Does Public Infrastructure Affect Regional Economic Performance?" in *The New England Economic Review* (Boston: The Federal Reserve Bank of Boston, September/October 1990), p. 25.

¹⁰Timothy J. Bartik, *Who Benefits From State and Local Economic Development Policies?* (Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 1991), p. 44-48.

¹¹Bartik, p. 48.

IS EDUCATION IMPORTANT TO ECONOMIC DEVELOPMENT?

As noted above, there seems to be a strong relationship between investments in human resources and economic growth. Yet, if education is important to development, in what way is it important and how do we know this? In this section, we will explore these two questions by examining the role of education as a key component in the development process.

Human Capital Theory

According to classical economic theorists, land, labor and capital were the three factors of production that determined economic growth and output. People used machines and tools to transform raw materials (such as cotton) into finished goods (such as clothing). Yet, in this classic model, all labor was viewed as identical; increasing the amount of labor in production was one strategy for increasing output and helping the economy to grow.

Beginning in the 1960s, however, economists (led by Nobel laureate Theodore W. Schultz) began to reassess the role of labor in the economy and assigned much greater significance to the skills and knowledge of the labor force. "Human capital theory," the name for this new outlook, argues that people can be viewed as an economic asset in which increased investment in health, skills, and knowledge provide future returns to the economy through increases in labor productivity.

While human capital theory helped focus attention on the role labor skills play in economic growth, more recent theories of economic development take an even more comprehensive view of the impact of human inputs on economic growth. For example, based on evidence that the birth of new firms and the growth of existing firms have a significant impact on economic development, eco-

nomic development theorists have increasingly recognized the role that entrepreneurial activity plays in economic growth.¹² Other development theorists have explored the importance of knowledge and technology in regional economic development.¹³ Together, these development theories suggest four ways that human resources influence economic development:

■ *Labor force skills.* The skills of a region's work force are the most basic component of its human capital resources. One important aspect of labor force skills is diversity—a diversified industrial and service economy requires a labor force with a broad array of skills, such as computational and manual skills, construction trade skills, industrial trade skills, engineering expertise, computer expertise, and management skills. Another aspect of labor force skills is the attitudes and work habits that affect productivity and innovation. Increasingly, the attitudes and habits required in today's economy include an ability to work on teams and a willingness to participate in quality circles. A final aspect of labor skills is adaptive and allocation skills. These skills relate to a worker's ability to learn new technologies, to adjust to changes in the production process and to identify and change misallocations of resources in the workplace.

■ *The development and application of knowledge.* As noted above, considerable attention has been devoted to the role of technology in economic development. However, most discussion of this issue overlooks that progress in research and technology is fundamentally based on human capaci-

¹²See Coffey and Polese, "Local Development: Conceptual Bases and Policy Implications," *Regional Studies*, Vol. 19, No. 2, p. 85-93, for a discussion of the role of entrepreneurs in regional economic development.

¹³See Edward J. Malecki, "Technology and Regional Development: A Survey," in *International Regional Science Review*, Vol. 8, No. 2, 1983, p. 89-125, for discussion of the role of technology in regional development.

ties. Increasing society's knowledge relies on research, teaching, and thinking by scientists. It is both a process of accumulation and a conceptual breakthrough based on human intelligence, skills, and creativity. Moreover, applying knowledge to particular economic purposes, i.e., technology, is also a human activity in which the training, skills, intelligence, and creativity of a larger segment of the work force, including engineers, professionals, and skilled workers, is the driving force. Knowledge may differ from skills in that it is not embodied in a person. However, since the production, dissemination, and application of knowledge is largely through investments in human capital, it is appropriate to consider the contribution of knowledge and technology to economic development as an extension of human resources.

■ *Entrepreneurial talent.* A significant part of the human resources that enhance a state's capacity for economic development is the presence of people to initiate, organize, and manage businesses. Entrepreneurs are a particularly important subset of human capital because they are a major driving force behind innovation and new business formation. Entrepreneurs do this by uncovering and creating new sources of wealth and new economic activities that add to the productivity and income-generating capacity of a region. Since entrepreneurs must also manage the enterprises they undertake, their human capital contribution includes bringing management skills to ventures.

■ *Agglomeration of human resources.* Labor force skills, knowledge and technology, and entrepreneurial talent are not only essential human resources for economic development, but concentrations of such human capital in a state or region can attract or stimulate a high level of economic development. The effects of such agglomeration include the following:

■ Attracting firms that seek access to the

resources and the lower costs that improved access will bring

- Attracting immigration of workers who add to the human capital base (and preventing out-migration)
- Stimulating development through new business creation, productivity increases, and applications of new technologies

With the advent of the Information Age, two additional aspects of human capital have become critically important to a state's or region's economic success. First, an educated work force is now more vital than ever. In the America of the 1950s, for example, many jobs required few or no skills. In fact, 73 percent of all manufacturing jobs in 1950 were classified as unskilled. Skill requirements in the workplace are rising, however, and by the year 2000, the percentage of unskilled jobs is expected to drop to as low as 15 percent.¹⁴ Thus, in order to attain a high wage/high skill economy, more young people will have to enter the work force with skills than ever before.

Second, the kind of knowledge required by the Information Age will be different from what has been required in the past. A recently completed study by New York State of the skills needed for entry level employment revealed significant shifts in the kind of learning required.¹⁵ For example, in the area of mathematics, employers reported much greater needs for skills in logic, probability, measurement, and statistics than for the traditional training in algebra, geometry, and trigonometry.

¹⁴"The Report of the Governor's Commission for Government by the People," (prepared for the State of Florida), Education Committee Report, Final Report, Vol. 2, 1991.

See also Peter Cappelli, "Are Skill Requirements Rising? Evidence from Production and Clerical Jobs," a working paper from the National Center on the Educational Quality of the Workplace, University of Pennsylvania, 1992.

¹⁵"The Report of the Governor's Commission for Government by the People."

Similarly, the study found greater demand for the ability to read for information and for critical analysis and evaluation than was provided by the current New York reading curriculum.

Of course, a more highly educated work force alone will not ensure success in the competitive global economy of the Information Age. Indeed, critics of the notion that education and training are the key to higher standards of living argue that, at present, there are a limited number of jobs that require high skills. Faced with competitive pressure, firms are just as likely to cut costs, substitute de-skilling forms of capital, and contract out as they are to make the kinds of productivity investments that can lead to more output, better work environments, and more pay. In other words, education alone simply leads to a reshuffling of the job queue. Thus, while increased skill levels are critical to success in the global economy, their impact will be limited without corresponding investments by the private sector in the kinds of technology and production processes that will enable workers to make the best use of their skills.¹⁶

¹⁶For more on the link between schools, training, and jobs, see Richard Murnane and Frank Levy, "Education and Training," in *Setting Domestic Priorities: What Can Government Do?*, ed. Henry J. Aaron and Charles L. Schultze (Washington, D.C.: The Brookings Institution, 1992). For more on company-based compacts between labor and management, see Barry Bluestone and Irving Bluestone, "Workers (and Managers) of the World Unite," in *Technology Review*, November/December 1992.

¹⁷Roland Sturm, *How Do Education and Training Affect a Country's Economic Performance? A Literature Survey* (Santa Monica, CA: Rand—Institute on Education and Training, 1993), p. 20.

¹⁸Edward Denison, *Trends in American Economic Growth 1929-1982* (Washington, D.C.: Brookings Institution, 1985).

¹⁹From George Psacharopoulos, "Returns to Education: An Updated International Comparison," *Comparative Education Review*, Vol. 17, 1981, p. 321-341, as cited in Sturm.

For a discussion of the impact of school quality on relative economic returns, see David Card and Alan B. Krueger, "School Quality and Black-White Relative Earnings: A Direct Assessment," *The Quarterly Journal of Economics*, February 1992. Card and Krueger demonstrate how schools of radically different quality in the segregated South led to widely divergent returns to education for Black and white workers. For example, in a comparison of Southern-born Blacks and whites born between 1910 and 1939 and living in Northern cities in 1960 (to control for labor market differences), Card and Krueger estimate average returns per year of schooling to have been twice as high for whites (6.04%) as for Blacks (3.04%).

How Do We Know That Human Capital Is Important to Development?

Empirical Evidence

From a macroeconomic perspective, several studies have attempted to account for the contribution of education to total economic growth. In reviewing these, Roland Sturm of the Rand Corporation concludes that "regardless of the particular calculation, education and its effect through labor quality are generally found to be among the most important contributors to economic growth."¹⁷ One such study by Brookings Institution scholar Edward Denison attributes 14 percent of our nation's economic growth between 1929 and 1982 to improvements in education and 27 percent to higher levels of education among those employed.¹⁸

From a microeconomic perspective, other researchers (beginning with the first human capital theorists) have attempted to measure the economic returns to the individual from education and training. While not a direct measurement of the contribution of education to total economic growth, measuring returns to individuals from education gives an indication of how people are valued in the development process. In a review of literature on returns to education across 44 countries, World Bank economist George Psacharopoulos estimates internal rates of return to education of 14 percent and 12 percent for secondary and higher education, respectively, in developed countries. In developing countries, the rates of return are even higher, particularly for primary education (32% in Asia, for example).¹⁹

Moreover, as education increases in importance

in the workplace, there is a clear trend of increasing returns to education.²⁰ A recent report by the National Commission for Employment Policy finds that "the new skill and technical requirements characteristic of the new economy are driving a wedge in the earnings distribution between those with access to skill and technology and those without access. . . . In the 1970s, college-educated men earned 56 percent more on average than those with just a high school diploma. In the 1980s, this premium increased to 74 percent."²¹

Evidence from Business Location Studies

Another way to measure the importance of human capital to economic development is to examine the relative value placed on education by businesses making location decisions. Fortunately, the issue of factors in industrial location has been explored in great depth in the economic development literature. In one review of the literature on industrial location, researchers John Blair and Robert Premus found that "the traditional economic factors of location [labor, markets, transportation] are becoming, as a group, quantitatively less significant. For example, unlike studies written in the 1940s and 1950s, most of the recent location studies we reviewed found noneconomic factors to have at least some influence on location. Education, unionization, personal reasons, business climate, energy, and familiarity with local conditions have been added to the 'must-and-want' list."²²

Yet, evidence of the overall importance of human capital in business location decisions should not mask the fact that different industries may place differing values on the importance of education. For example, a recent study by the U.S. Department of Agriculture of the factors associated with the growth of local and regional economies found "limited, and sometimes contradictory, evidence for the effects of educational attainment on economic growth."²³ These find-

ings likely reflect that, while many industries seek to locate in areas of high educational attainment, certain industries may still be attracted to areas with lower education levels. Among such firms and sectors are the following:

- The most likely to relocate to lower cost sites abroad
- As currently structured, those incapable of providing better employment opportunities for their workers
- Those likely to continue to operate in the United States by demanding wage and benefit concessions from their employees, speeding up production lines, and moving to less affluent areas.

Nonetheless, most companies value a more highly trained work force. Indeed, recent research indicates that, more than just on the must-and-want list, an educated work force has become one of the primary location factors for growing companies. A 1994 survey of the nation's leading corporate real estate professionals by the accounting firm of Ernst & Young found that an educated

²⁰See, for example, Lawrence F. Katz, testimony before the Joint Economic Committee of the Congress of the United States, hearing on creating high-wage jobs in a global economy, September 16, 1992. Katz suggests that increasing educational wage differentials, with the earnings of young male college graduates increasing by 30% relative to those with 12 or fewer years of schooling, are one of three primary causes for increasing wage differentials.

²¹National Commission for Employment Policy, *On Shaky Ground: Rising Fears About Incomes and Earnings*, by chief economist Stephen J. Rose, Research Report No. 94-02, October 1994, p. v and vii.

²²John Blair and Robert Premus, "Major Factors in Industrial Location: A Review," *Economic Development Quarterly*, Vol. 1, No. 1, 1987, p. 80.

²³Lorin D. Kusmin, "Factors Associated with the Growth of Local and Regional Economies: A Review of Selected Empirical Literature," U.S. Department of Agriculture, Economic Research Service, Report No. AGES 9405, March 1994, p.47.

See also Education and Rural Economic Development: Strategies for the 1990s, Agriculture and Rural Economy Division, Economic Research Service, U.S. Department of Agriculture, FRS Staff Report No. AGES 9153, September 1991. This study reaches a similar finding—that "education's potential as a local area rural development strategy is probably quite limited."

labor force was the second highest ranking selection factor, behind only low lease rates.²⁴ In one of the more recent studies, *Entrepreneurial Hot Spots: The Best Places in America to Start and Grow a Company*, economist David Birch et al. conclude that the most attractive locations for entrepreneurs are not those that offer cheap wages and low taxes, but rather those that offer world-class universities, good roads, and access to airports.²⁵ Further, economist Bennett Harrison argues that, although multinational corporations are demonstrating less and less loyalty to particular countries or communities as a result of the "global economy," newer thinking indicates that a "home base of mutually supportive institutions" is now more important than ever to a company's competitiveness. These mutually supportive institutions include those that insure access to capital and trained workers, as well as those that insure the provision of appropriate infrastructure.²⁶

In addition to the general industrial location literature, one recent study by Ronald Swager of the University of Southern Mississippi examines the particular relationship between education and business location. Based on a survey of location consultants and real estate executives, Swager found that, for half of all respondents, education was judged to have been very important or critical in site selection decisions over the past ten years. What's more, almost 75 percent predicted that education would be a very important or critical location factor in the next ten years.²⁷

Popular Literature

Further evidence of the importance of a well-trained work force to businesses making location decisions comes from more popular literature. A November 1994 article in *Money* magazine on the top 20 locations for small businesses found an educated work force to be one of the chief characteristics that contribute to the entrepreneurial

vitality of an area.²⁸ The *Money* study was based on data provided by CFED, which ranked the 779 "commuting zones"²⁹ in the United States based on a variety of indicators important to small businesses, including overall job growth, growth in proprietorships, per capita income, and proprietors' average earnings. After identifying the top locations, *Money* staff interviewed more than 50 experts, from economists to local business leaders in the top ranking areas, to identify what makes an economy attractive to small firms. Based on these interviews, the *Money* study identified an educated work force as one of the top five characteristics common to "winning cities."

²⁴"U.S. Corporate Relocation Survey: Where American Firms Plan to Relocate During the Next Decade," in *The Ernst & Young Almanac and Guide To U.S. Business Cities*, 1994, p. 298.

²⁵David Birch, Anne Haggarty, William Parsons, and Greg Rossel, *Entrepreneurial Hot Spots: The Best Place to Start and Grow a Company* (Cambridge, MA: Cognetics, Inc., 1993), p. 15-19.

²⁶Bennett Harrison, "Home Improvement," *Technology Review*, July 1993, p. 64.

²⁷Ronald Swager, *The Importance of Education in Business Location Decisions in the South*, the University of Southern Mississippi, Center for Community and Economic Development, July 1993, p. 32.

²⁸Mark Bautz, "The 20 Top Spots for Entrepreneurs," *Money*, November 1994.

²⁹Commuting zones are multi-county regional economies that are constructed from counties based on journey-to-work data from the decennial Census. Developed by the USDA's Economic Research Service, these commuting zones give a more accurate picture of regional economic activity than political boundaries.

DOES EDUCATION SPENDING AFFECT ECONOMIC DEVELOPMENT?

The case is clear—human capital is critically important to economic development. Moreover, with the advent of the Information Age, the role of human capital will continue to increase in importance for our economy. This implies that if, as many predict, acquiring and applying knowledge will become the key competitive factor in the future economy, the primary strategy for enhancing economic growth will be through increases in human capital that increase labor productivity.

Thus, investments in education should have a beneficial effect on long-term economic health. Indeed, several studies confirm this relationship. What follows is a review of some of the more convincing studies. The first takes a microeconomic perspective and examines the relationship between education spending and future earnings. The second two are studies of the factors that influence aggregate economic growth and are notable in that each includes an education spending variable. In addition, a review of additional statistical work conducted by CFED examines the relationship between education spending and performance on CFED's annual *Development Report Card for the States*.

Microeconomic Literature

Given their preference for tangible, market-based outcomes measures, as well as the limitations of measuring human capital on the basis of standardized achievement tests, several economists have examined the value of schooling inputs by studying the relationship between school quality (measured on the basis of expenditures per student or the pupil-teacher ratio) and student outcomes (measured in terms of future earnings). This approach assumes that, since workers with higher skills tend to earn more, school quality can increase future earning poten-

tial (holding parental education, race, and IQ constant) either by helping students to learn more per year of schooling or by increasing the number of years students stay in school.

In a review of this literature on school quality and earnings, David Card and Alan Krueger of Princeton University summarize the findings from 13 different studies based on eight different data sets on earnings. Based on their review, Card and Krueger find "a high degree of consistency across studies regarding the effect of school quality on students' subsequent earnings. The studies typically find that a 10 percent increase in school expenditures is associated with a 1 to 2 percent increase in annual earnings for the students later in life."³⁰ In most cases, these studies control for level of education, meaning that the estimated income increase represents an increase for a given level of schooling. In addition, Card and Krueger also find that increases in school resources are positively associated with significantly higher education attainment. As noted above, both of these avenues (staying in school longer and learning more in a given year of schooling) increase students' skills and, thus, tend to increase future earning potential.

Macroeconomic Literature

Public Services and Economic Development

In a forthcoming Economic Policy Institute report,³¹ Timothy Bartik of the W.E. Upjohn Institute for Employment Research concludes that

³⁰David Card and Alan B. Krueger, "School Quality and Earnings: A Survey," Princeton University and National Bureau of Economic Research, unpublished paper.

³¹Timothy J. Bartik, "Public Services and Economic Development in American States," forthcoming report prepared for the Economic Policy Institute.

spending on state and local public services, including primary, secondary, and higher education spending, can have a positive impact on private sector productivity and output.

Bartik uses a model that estimates the effects of increases in public services that are financed by an increase in taxes and finds, for example, that "a property tax financed increase in higher education spending of one percent of a state's personal income would increase state manufacturing output in the long-run by 8.3%."¹² Yet, most of the findings from this study show rather modest effects of public services expenditures on economic growth. As a result, Bartik concludes that "the most important policy implication of these results is that, in most cases, increased taxes and increased public services spending will not cause [a] jurisdiction to suffer an economic disaster. In most cases, the negative effects of taxes on manufacturing output, and the positive effects of public services spending on manufacturing output, will be offsetting."¹³

¹²Bartik, "Public Services and Economic Development in American States," p. 26.

¹³Bartik, "Public Services and Economic Development in American States," p. 48.

¹⁴The education spending variable used in this study was total state and local education expenditures from own sources as a percentage of state personal income.

¹⁵Michael Wasylenko, "The Effect of Business Employment on Employment Growth," *Final Report of the Minnesota Tax Study Commission*, Vol. 2, Staff Papers (1986), p. 70.

¹⁶Our decision to use per pupil spending as the education spending variable was based on two assumptions: 1) that those states with high average spending on education are likely to receive high Economic Performance grades, and 2) that increasing average spending per pupil will likely result in higher Economic Performance grades. Further, we chose average spending rather than spending change because spending change 1) assumes every percentage increase in education spending is equally good, 2) overcompensates for those with the lowest levels of spending, and 3) places at a disadvantage those states already close to an optimum spending level.

Business Climate and Employment Growth

In a report on the effect of a series of business climate variables on employment growth in the 48 contiguous states between 1973 and 1980, Michael Wasylenko found a significantly positive relationship between education spending and total employment growth.¹⁴ Wasylenko's research indicated that a 1 percent increase in spending on education relative to income was associated with a 0.72 percent increase in total employment over the period. Based on these findings, Wasylenko concluded that "higher expenditure on education relative to income has positive effects on overall employment growth, and budget-cutters should not reduce education expenditures very much, if at all."¹⁵

New Statistical Analysis Using CFED's Development Report Card

Given CFED's findings from the 1994 *Development Report Card for the States* showing a relationship between investments in development capacity (human resources, technology resources, financial resources, infrastructure, and amenity resources) and economic performance discussed above, CFED compared the 50 states' rankings on the *Development Report Card's* Economic Performance Index over the past ten years with state per pupil spending on education in prior years.¹⁶

In conducting this study, CFED performed two sets of analysis—one with a lag of five years between spending figures and economic performance grades, and one with a lag of ten years, all

over an eleven-year period ending in 1993. In using this lag between education spending and economic performance grades, our assumption was that the returns from investments in education will not appear immediately, but rather will emerge in the long run as students complete school and enter the work force. Indeed, it is possible that even a ten-year lag is still too short of a period in which to capture the full benefits from investments in education. Yet, in the case of both the five-year and the ten-year lag, we found a statistically significant relationship between per pupil spending and economic performance grades.

In addition, we attempted to capture the impact of additional spending over and above the average level on a state's chances of receiving an honor grade (A or B) in economic performance.¹⁷ The results indicate that those states spending the average amount per pupil (\$4,510 in 1990-91 dollars)¹⁸ increase their chances of receiving an A or B five years later by 1.0 percent with an additional \$100 in spending per pupil (2.2% increase in per pupil spending). While not guaranteeing improved grades, this finding indicates that a spending increase of this level slightly improves a state's chances of receiving an honor grade.

The results with a ten-year difference between spending and economic performance grades indicate that, at the spending mean (\$3827 in 1990-91 dollars), states can increase the probability of receiving an A or B grade by 1.3 percent with an additional \$100 in spending per pupil (2.6% increase in per pupil spending). Again, these results, while not large, show a statistically significant positive relationship between education spending and economic performance grades on CFED's *Development Report Card*.

We also found that, for those states below the spending mean, the same \$100 per pupil spend-

ing increase leads to a slightly larger increase in the probability of receiving an honor grade. This increased probability levels off at a per pupil spending level of between \$4,000 and \$5,000. In other words, a state spending below the national average is likely to experience increasing returns to scale, on average, for additional per pupil spending; a state spending above the national average is likely to experience quickly decreasing returns to scale, on average, for additional per pupil spending.

In addition, CFED sought to evaluate the relationship between education spending and the three subindexes of the Economic Performance Index. Two subindexes demonstrated a statistically significant relationship:

- *The Earnings and Job Quality Subindex*, which measures pay and benefits. This subindex had a positive and statistically significant relationship to education spending—increasing per capita spending on education by \$100 at the mean increases the probability of a state's receiving an A or B on this subindex by 1.4 percent.

- *The Equity Subindex*, which measures the poverty rate and income distribution. This subindex also had a positive and statistically significant relationship to education spending—increasing per capita spending on education by \$100 at the mean increases the probability of a state's receiving an A or B on this subindex by 1.8 percent.

¹⁷In obtaining these results, CFED conducted a probit, which attempts to capture qualitative responses both on per pupil spending on education and on whether or not the state received an honor grade (A or B) that year, for all the 50 states as a group over 11 years.

¹⁸Because the measures used to create the Development Report Card grades are not adjusted for cost of living, and because we lacked an appropriate purchaser price index for education inputs (cost of books, cost of teachers, etc.) in each state, the education spending figures were not adjusted for cost of living differences among states.

These results confirm what one might expect, given the earlier discussion about the importance of education for economic development. First, due to high and increasing returns to education, education's greatest economic impact is in decreasing poverty and in generating a more equitable distribution of income. Second, due to these same factors, education also has a positive impact on earnings. Third, because educated workers are a critical factor in high-skill, high-performance companies, but not necessarily in all companies, it is understandable that we did not find a statistically significant relationship between education spending and the Employment Subindex (the third subindex of the Economic Performance Index). In other words, the impact of education on employment tends to vary from state to state, depending in part on each state's mix of employers.

It should also be noted that, given our earlier discussion about the nature of economic development and how it encompasses more than just jobs and wages, these findings concerning the relationship between education spending and grades on the *Development Report Card for the States* may understate the overall impact of education spending on economic development. In the following section, we will explore further the relationship between education spending and other non-market measures of economic development.

QUESTIONS ABOUT THE IMPACT OF EDUCATION SPENDING ON STUDENT ACHIEVEMENT

Given the evidence discussed above, one might be led to conclude unambiguously that in order to improve economic performance cities and states should increase education spending across the board. Yet, while human capital plays a critical role in economic development and while research indicates that spending on education has a positive effect on economic development, those who support increased education spending must account for a vexing problem—doubt remains about whether there is any relationship between education spending and educational performance.

Therefore, in the section that follows, we present a review of the "Does Money Matter?" debate, examining the arguments on both sides of the question. Since education, when viewed through economic development lenses, is both the primary input in efforts to create a high skill/high wage economy as well as one of many investments seeking scarce public funds, we hope to show that a state's or region's economic health is best served by a common sense view that seeks out a middle way between a simplistic interpretation that money does not matter and a naive conclusion that money is everything.

The Debate: Does Money Matter?

The Hanushek Argument

As with most questions of social science, measuring the relationship between education spending and educational performance is difficult and complicated by a range of factors, both inside and outside the school house, that influence student

performance. Perhaps the most commonly used technique for examining this relationship, adapted from the world of economics, is the "production function." For years, economists have used production functions to study the relationship between inputs (land, labor, capital) and products or outputs produced by industry.

A 1966 report entitled *Equality of Educational Opportunity* (more commonly referred to as the Coleman Report) was the first to employ an "educational production function" to examine the relationship between the inputs to the educational process (such as class size, length of school day, teacher experience, teacher pay) and outcomes. The Coleman Report found that differences in student achievement (measured in terms of standardized test scores) had little to do with differences in schools. Rather, family background and the characteristics of other students in the school were found to be much more important.

More recently, in a seminal article entitled "The Economics of Schooling: Production and Efficiency in the Public Schools," Eric Hanushek of the University of Rochester examined the findings from 147 separate studies of educational production functions and confirmed the findings of the Coleman Report. Hanushek concluded:

The results are startlingly consistent in finding no strong evidence that teacher-student ratios, teacher education, or teacher experience have an expected positive effect on student achievement. According to the available evidence, one cannot be confident that hiring more educated teachers or having smaller classes will improve student performance. Teacher experience appears only marginally strong in its relationship. . . . There appears to

be no strong or systematic relationship between school expenditures and student performance.³⁹

Hanushek's work has been cited widely, not only in educational circles, but in the political arena, as well. In fact, in order to support the Reagan administration's position that the problems of America's schools were not the result of insufficient funds, former Secretary of Education William Bennett made frequent reference to Hanushek's conclusions.

Since many have attempted to politicize Hanushek's conclusions and to assert simply that "money doesn't matter," it is important to clarify Hanushek's position. In a more recent article, Hanushek writes: "most economists, including myself, would readily accept that differences in spending would be directly related to the education provided *if schools were operating efficiently*. The previously presented evidence [Hanushek's review of past education production function studies] indicates clearly, however, that assuming efficiency in spending is entirely inappropriate. . . . In other words, equity and efficiency are inextricably linked. It is not possible to ignore efficiency issues under the guise of being concerned solely with equity."⁴⁰

Thus, Hanushek is not claiming that more

money does not ever matter, rather that money is not everything. Moreover, more money spent wisely could make a difference.

The Response—New Thinking and Research

Partly in response to Hanushek's findings and partly as a result of improvements in education production function research (including new statistical techniques that can account for some of the problems with the data used by Hanushek), a number of different studies have been undertaken in recent years that challenge Hanushek's conclusions. In certain cases, these studies question Hanushek's finding of no relationship between education spending and student performance. In other cases, the studies seem to demonstrate that spending does have an effect on student achievement. Yet, in none of these studies do the findings suggest more education spending across the board. Some of the more interesting of these studies are discussed below.

Research Using "Meta Analysis"

In a re-analysis of the data used by Hanushek, researchers Larry Hedges, Richard Laine, and Rob Greenwald suggest that the data from these previous education production function studies do not support Hanushek's conclusions.⁴¹ To start with, Hedges et al. question Hanushek's use of "vote counting"⁴² as a procedure for analyzing the results of past studies. Because it may fail to detect statistically significant relationships, vote counting lacks statistical power. Moreover, vote counting is unable to give an indication of the magnitude of relationships that may exist.

To overcome these problems, Hedges et al. undertook a re-analysis of the data used by

³⁹Eric Hanushek, "The Economics of Schooling: Production and Efficiency in the Public Schools," *Journal of Economic Literature*, 24 (September 1986), p. 1162.

⁴⁰Eric Hanushek, "Can Equity Be Separated from Efficiency in School Finance Debates?" in *Essays on the Economics of Education*, edited by Emily P. Hoffman (Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 1993), p. 48-49.

⁴¹Larry V. Hedges, Richard D. Laine, and Rob Greenwald, "Does Money Matter? A Meta-Analysis of Studies of the Effects of Differential School Inputs on Student Outcomes," *Educational Researcher*, Vol. 23, No. 3, April 1994.

⁴²Vote counting makes use of a simple tallying procedure to analyze results across numerous studies.

Hanushek, using a more sophisticated synthesis method known as "meta-analysis."⁴³ Using meta-analysis and starting with the 187 education production function equations used by Hanushek in his work, Hedges et al. produced the following conclusions:

- With the exception of teacher/pupil ratio and facilities, there are "at least some positive relations between each of the types of educational resource inputs studied and student outcome."⁴⁴ Those inputs showing a positive relationship to student outcomes included per pupil expenditures, teacher experience, teacher education, teacher salary, and administrative inputs.
- In terms of the magnitude of the impact of various resources, per pupil expenditures and teacher experience demonstrate the greatest effect on student outcomes. The impact of other inputs (teacher salary, administrative inputs, facilities, class size, etc.) is more mixed.

Although it may seem contradictory that overall per pupil expenditure has such a clearly positive impact, while the effect of the inputs that make up overall spending (teacher salary, class size, etc.) is more mixed, Hedges et al. explain this. They argue that "this pattern of results is consistent with the idea that resources matter, but allocation of resources to a specific area (such as reducing class size or improving facilities) may not be helpful in all situations. That is, local circumstances may determine which resource inputs are most effective."⁴⁵

In summary, Hedges et al. assert that "the question of whether more resources are needed to produce real improvement in our nation's schools can no longer be ignored. Relying on the data most often used to deny that resources are related

to achievement, we find that money *does* matter after all."⁴⁶

Research on Class Size

In a large scale, four-year study conducted during the late 1980s, researchers with Tennessee's Project STAR (Student/Teacher Achievement Ratio)⁴⁷ tested the effect of class size reductions on student achievement. By making use of a controlled experiment (rather than existing data), Project STAR was able to avoid some of the limitations of previous education production function research.⁴⁸

Initially, students in 328 kindergarten classes across 79 schools were randomly assigned to either classes whose size had been reduced by approximately one-third (small classes)⁴⁹ or to a control group (regular classes). For four years (kindergarten through grade 3), Project STAR followed this large cohort of students and tested their achievement levels. Students remained in the same treatment group (class size) through the duration of the study; teachers were randomly assigned to classes each year. Project STAR's researchers found the following:

- Each of the four years, small class students

⁴³Meta-analysis permits the researcher to perform both combined significance tests and effect magnitude analyses. For more, see Hedges et al.

⁴⁴Hedges, et al., p. 10.

⁴⁵Hedges et al., p. 11.

⁴⁶Hedges, et al., p. 13.

⁴⁷See Project STAR and Class Size Policy, edited by John Folger, Peabody Journal of Education, Volume 67, Number 1, Fall 1989.

⁴⁸For one, most of the studies reviewed by Hanushek use cross-sectional data rather than longitudinal data. Longitudinal data allow a more accurate assessment of the cumulative effect of inputs over time. Second, most of the production function studies used by Hanushek were too simplistic to address effectively issues of causation.

⁴⁹Project STAR provided for an average reduction in class size from 23 to 15.

scored significantly higher than students in regular classes in reading and math.

- The small class achievement advantage is found in all kinds of schools: inner city, suburban, rural, and urban. However, the small class advantage is largest, on the average, in inner-city schools as compared with other types of schools.
- The effect of a small class increases from kindergarten to first grade, but beyond first grade there is no cumulative effect.

Because reducing class size is a relatively costly intervention, John Folger and Carolyn Breda of Vanderbilt University have concluded that "even the greater class size effects gained in Project STAR do not make across-the-board class size reduction an attractive or cost-effective strategy for improving student achievement."⁵⁰ They recommend instead targeted class size reductions combined with other proven instructional techniques for improving student achievement.

Research on Teacher "Characteristics"

Using a comprehensive education database from Texas, Ron Ferguson of Harvard's Kennedy School of Government has provided new insights into the relationship between skilled teaching and student achievement.

John Folger and Carolyn Breda, "Evidence from Project STAR About Class Size and Student Achievement," in Project STAR and Class Size Policy.

"See Ronald F. Ferguson, "Paying for Public Education: New Evidence on How and Why Money Matters," Harvard Journal of Legislation, Vol. 28 (Summer 1991).

"Excerpt from Ferguson, "Paying for Public Education: New Evidence on How and Why Money Matters," appearing in An Examination of the Federal Role in School Finance: Hearings Before the Subcommittee on Education, Arts and Humanities of the Committee on Labor and Human Resources, United States Senate, 103rd Congress, First Session, July 26, 27, and August 3, 1993, p. 30.

Ferguson's research makes use of a database from Texas that includes not only achievement test scores for all students in odd-numbered grades (Texas Educational Assessment of Minimum Skills—TEAMS), but also literacy skills scores for all teachers and administrators (Texas Examination of Current Administrators and Teachers—TECAT). This large and unique data set enables Ferguson to overcome some of the methodological deficiencies in previous education production function studies.

Based on his research,⁵¹ Ferguson finds the following:

- Better literacy skills (i.e., higher TECAT scores) among teachers, fewer large classes, and more teachers with five or more years of experience all predict better TEAMS scores.
- Teachers' test scores are by far the most powerful of the school quality measures—TECAT scores explain roughly 25 percent of the variation among Texas school districts in students' average TEAMS scores for reading and math.
- Higher salaries attract better teachers.

In addition, Ferguson finds that, for districts in Texas, a threshold exists at a districtwide ratio of 18 students per teacher. Adding teachers to achieve a teacher/pupil ratio below this level does not typically raise test scores; adding teachers to achieve a ratio closer to the threshold typically does raise test scores.

Ferguson concludes that "since more and better teachers can help to improve students' test scores and higher salaries attract more and better teachers, money matters for raising test scores."⁵²

However, recognizing that increasing salaries across-the-board while holding teaching methods constant is unlikely to increase teacher performance in the short run, Ferguson notes:

To insure that salary enhancements foster improvements in teaching, salary increases need to be supplemented by efforts to assist existing teachers in upgrading their skills; measures to persuade talented and experienced teachers to stay in the profession; and campaigns to attract academically stronger candidates of all races into primary and secondary school teaching.⁵³

The results of this newer research into the relation between education spending and student performance can best be summarized in the words of Johns Hopkins education researcher Robert Slavin: "It is clear (and obvious) that increased dollars do not magically transform themselves into greater learning. But it is just as clear (and just as obvious) that money can make a difference if spent on specific programs or other investments known to be effective."⁵⁴

Legal Arguments

One final way to look at the debate about whether education spending has an effect on student performance is to examine the legal challenges to state systems for funding public education. In fact, while the question of whether money matters has attracted a great deal of interest in scholarly journals, it has become the focus

of even greater attention in the courtroom.

In states across the country, courts have been asked to rule whether the method of funding public education (typically a reliance on local property taxes) fails to provide equal educational opportunity for all children. At the center of this question lies the debate about whether money matters. If money does matter, and if equal opportunity to education is constitutionally guaranteed, then states with spending disparities between districts are not meeting their constitutional requirements. If money doesn't matter, then spending differences are also of little consequence.

Of course, the courts have not been asked to rule directly on the question of whether money matters. Yet, their decisions represent, from a legal perspective, an evaluation of the arguments on both sides of the issue. The landmark ruling in this type of case comes from *Serrano v. Priest*, in which the California State Supreme Court ruled that equal access to education required equal funding:

Although an equal expenditure level per pupil in every district is not educationally sound or desirable because of differing educational needs, equality of educational opportunity requires that all school districts possess an equal ability in terms of revenue to provide students with substantially equal opportunities for learning. (*Serrano v. Priest*, 1977)

Since *Serrano*, 23 states have faced legal challenges to their systems of education finance.⁵⁵ While each challenge involves complex legal issues, three important trends emerge. First, courts are increasingly likely to overturn state school finance systems because of funding disparities between districts. As education finance expert Allan Odden has noted: "In the 1990's almost all the courts, when these decisions come before them, are overturning State school finance

⁵³An Examination of the Federal Role in School Finance, p. 31.

⁵⁴Robert E. Slavin, "After the Victory: Making Funding Equity Make a Difference," in *Theory into Practice* (College of Education, The Ohio State University), Volume 33, Number 2, Spring 1994, p. 99.

⁵⁵See Mary Fulton and David Long, *School Finance Litigation: A Historical Summary*, Education Commission of the States, April 1993.

systems. The batting record in the 1970's and 1980's was about .330. In the 1990's it is about .900, so it looks like if you get a court case filed, it is very likely that the system will be overturned."⁵⁶ In other words, the courts are increasingly likely to imply that money does matter.

Second, in the 12 states in which the system was found to be constitutional, the courts typically based their decisions not on a finding that education spending disparities are unimportant, but rather on a finding that education was not a fundamental right in that particular state or on arguments for local control of education. In other words, in none of those 12 states (whose education finance systems were found to be constitutional) did the courts imply that "money doesn't matter."

Third, recent court decisions in states such as Kentucky, Alabama, and New Jersey have moved beyond mere spending adequacy to require states to provide equality in the depth, breadth, and quality of educational opportunities. Typically, these cases have referred to the need to teach students the kind of problem-solving and critical-thinking skills that will be demanded increasingly in the job market of the future. Summarizing this, Allan Odden notes that "the court trend seems to be towards more equal spending per pupil and at a level that would allow all districts and schools to educate students to a high level of academic achievement."⁵⁷

⁵⁶Allan Odden in *An Examination of the Federal Role in School Finance: Hearings Before the Subcommittee on Education, Arts and Humanities of the Committee on Labor and Human Resources, United States Senate, 103rd Congress, First Session, July 26, 27, and August 3, 1993*, p. 113.

⁵⁷Odden, p. 117.

WHAT ARE THE CONSEQUENCES OF UNDERSPENDING ON EDUCATION?

If increased spending on education can produce positive economic development outcomes, is the opposite also true? In other words, are there economic development consequences for under-investing in human capital? The economic development literature, as well as evidence of gross under-investment in public schools, provides insight on this question as well.

To begin with, advocates for more equitable funding of schools⁵⁸ have argued for years that extreme underfunding of education for certain populations of children can have drastic consequences on their ability to achieve success, both socially and economically, later as adults. In *Shortchanging Children: The Impact of Fiscal Inequity on the Education of Students at Risk*, William Taylor and Dianne Piche note that some of the programs that have been shown to make a difference in the life chances of children are too frequently denied to children in the poorest school districts:⁵⁹

■ **Preschool.** A number of the poorest districts in Texas could not participate in a state-funded preschool program because they lacked facilities and matching funds. In Maryland, the vast majority of children in affluent Montgomery County had the opportunity to attend either public or privately sponsored preschool programs, while in Baltimore City, at least half the children did not attend preschool.

■ **Class Size.** In Montana, teacher student ratios in wealthy districts were as low as 1:13, while in poorer districts they were in the 20s or low 30s.

■ **Curriculum.** In the wealthy Princeton, New Jersey, school district, there was one computer for 8 children, while the city of Camden's schools had one computer for 58. In Texas,

many poor districts offered no foreign language, chemistry, calculus, college preparatory, or honors programs.

■ **Prevention of Early Reading Failure.** In Maryland in 1979, 70 percent of the third-grade children in the property-poor district of Baltimore City had below-level reading scores while only 7 percent of the children in the wealthy district of Montgomery County fell below grade level in reading. Yet the wealthier district was able to provide a special reading teacher for those few students having reading difficulties, while the property-poor districts could not afford an additional teacher.

Clearly, these stark contrasts argue against a simplistic conclusion that money doesn't matter. In cases such as these and in Texas, where in 1990 the court found the average per pupil expenditure in the 100 wealthiest districts was \$7,233 compared with \$2,978 in the 100 poorest⁶⁰ (a difference of around \$4,250, which for a class of 30 translates into a difference of \$127,500 annually), money could buy a lot.

While it seems obvious that such extreme underfunding will have a significant impact on the labor market chances of children in resource-poor districts, it is also becoming clear that such limited opportunity affects economic opportunity for all. For example, preliminary research conducted by Larry Ledebur and William Barnes for the National League of Cities shows that, among

⁵⁸See, for example, Savage Inequalities: Children in America's Schools by Jonathan Kozol.

⁵⁹Taken from testimony of William L. Taylor before the Subcommittee on Education, Arts and the Humanities, Committee of Labor and Human Resources, United States Senate, August 3, 1993.

⁶⁰William L. Taylor and Dianne M. Piche, "Fiscal Equity and National Goals," in Education Week, March 20, 1991.

metropolitan areas, those areas with greater city-suburban income disparities tend to have lower rates of employment growth.⁶¹

This would seem to indicate that the converse of the education spending-economic development link is also true. Namely, that a lack of adequate spending in inner cities on education (through the relationship between school quality and earnings—see Card and Krueger) leads to lower overall economic growth.⁶²

Moreover, as noted above, economic development is more than just income or employment growth. In addition to these measures, successful economic development includes measures of overall quality of life, such as the health of the natural environment, the availability of quality living environments, personal health, and personal security. Thus, another way to look at the issue of the impact on economic development of lack of investment in human capital is to examine what happens to the quality of life in communities that underinvest in human capital. According to the Committee for Economic Development:

- About 82 percent of all Americans in prison are high school dropouts, and it costs an average of \$20,000 annually to maintain each prisoner.

⁶¹Larry C. Ledebur and William R. Barnes, *City Distress, Metropolitan Disparities and Economic Growth* (Washington, D.C.: National League of Cities, 1992).

⁶²See also Richard Voith, "City and Suburban Growth: Substitutes or Complements," *Federal Reserve Bank of Philadelphia Business Review*, September/October 1992, p. 21-31. Voith, who studied economic performance in 28 major metro areas across the Northeast and Midwest, found that with few exceptions, the better the center city does, the better the suburbs do.

⁶³Gordon Berlin and Andrew Sum, *Toward a More Perfect Union: Basic Skills, Poor Families, and Our Economic Future*, Ford Foundation Project on Social Welfare and the American Future, 1988. For earlier work on this subject, see also Robert Haveman and Barbara Wolfe, "Schooling and Economic Well-Being: The Role of Non-Market Effects," *Journal of Human Resources* 19 (1984).

- Investing \$4,800 per child in preschool education can reduce teenage arrests by 40 percent.

In addition, according to researchers Gordon Berlin and Andrew Sum,⁶³ there is a strong relationship between low basic skills and welfare dependency—60 percent of out-of-wedlock births among women 19 to 23 years old are to those who score in the lowest 20 percent in basic skills tests. Further, as compared with young people with above average basic skills, those with low basic skills are nine times more likely to drop out of school, eight times more likely to become mothers out of wedlock, and four times more likely to become welfare dependent. Berlin and Sum estimate that raising the mean of the basic skills tests of 19- to 23-year-olds by the equivalent of one grade would increase lifetime earnings by 3.6 percent, reduce the likelihood of births out of wedlock by 6.5 percent, welfare dependency by 5.3 percent, and arrests by 6.2 percent.

HOW CAN STATES BEST USE EDUCATION INVESTMENTS TO PROMOTE ECONOMIC DEVELOPMENT?

There are no easy answers to the question of the relationship between education spending and economic development. On the one hand, it is clear that money does make a difference, particularly for students in schools with woefully inadequate resources. On the other hand, there is enough concern about how education monies are spent to warn against simply allocating more money to schools. In other words, common sense seems to indicate that economic health is best served by an understanding that lies somewhere between a simplistic interpretation that money does not matter and a naive conclusion that money is everything.

In many ways, this finding should come as no surprise. In the United States, where we spend almost 6 percent of our Gross National Product and roughly 18 percent of total tax collections on primary, secondary, and higher education,⁶⁴ there seems to be some consensus already that money does matter.

Given this, the real issue is whether spending more on education will improve economic development. From an economic development perspective, the answer is a qualified "yes." On the one hand, it seems clear that many students need more help to meet standards; that standards are changing; that competition for qualified teaching professionals is hot (i.e., teachers' salaries will have to go up some just to keep up); and that it will be politically difficult to meet the needs of at-risk youth via redistribution alone. All of this suggests the need for additional education spend

ing. On the other hand, given both the growing anti-tax feelings across the country and the legitimate concerns about how efficiently schools are operating, new funds for education should be spent on what works and should be allocated with stronger accountability.

Thus, we would argue that increased spending on education can have a significant impact on a city's, region's, or state's economy, if done properly. Cities and states can do this by looking at education spending as one of the most critical investments in long-term economic health and by applying the following design principles that define overall best practice for state economic development policy:⁶⁵

Impact: Increased investments in education should seek to identify the most pressing needs and support programs with the potential to meet the full scale of those needs.

After 20 years of equity litigation, students in resource-poor school districts across the country, many of them "at-risk" of leaving the education system unprepared for further education or work, still do not have access to some of the basic educational resources that children in wealthier districts take for granted. Moreover, according to this year's Department of Education back-to-school forecast, of the roughly 50 million children expected to attend elementary and secondary schools this year, almost 32 percent will be from minority backgrounds. This is an increase of more than five percentage points in just one decade (in 1984, 26.7 percent of elementary and secondary students came from minority families). Failing to invest properly in these students, many of whom come from backgrounds that leave them less prepared to do well in school, will have dire conse-

⁶⁴Figures from UNESCO and the Advisory Commission on Intergovernmental Relations, respectively, cited in What Everyone Should Know About Financing Our Schools, (Washington, D.C.: National Education Association, Research Division, 1990), p. 17.

⁶⁵These design principles are based on guidelines for effective state development policies that CFED has identified elsewhere as the "Third Wave." See, for example, Brian Dabson and Bill Schweke, "Talking Third Wave," The Entrepreneurial Economy Review, Vol. 10, No. 2, Winter 1992.

quences for our competitiveness in an Information Age economy that demands increasing levels of skilled workers.

Thus, one obvious strategy for achieving significant economic impact with increased education investments would be to invest in proven techniques as well as promising reform approaches that will help to improve the performance of low achievers. These might include the following:⁶⁶

- Preschool and other early childhood development programs
- Targeted class-size reductions, particularly for children in the early grades and children from low-income families
- School-based reform approaches (such as Accelerated Schools, the Comer School Development Program, and the "Success for All" model) that combine consistently high expectations for at-risk children with school-wide support systems to help students meet these expectations
- Experienced teachers assigned to teach subjects in which they have been well-trained
- Investments in staff development to help teachers (a) learn the most up-to-date information on curriculum and instruction and (b) incorporate these learnings into their daily lessons.

Accountability: Increased investments in education should be made based on the extent to which they can help solve the problem they were created to address.

In return for more resources, schools are being held accountable for improving student performance. Long a rallying cry of those critical

of the performance of America's schools, this notion is gaining increasing acceptance within the education establishment. For example, in calling for a fundamental change in the federal Chapter 1 program,⁶⁷ an independent Commission on Chapter 1 made up of a diverse group of educators, child advocates, researchers, and concerned citizens concluded that, among other things, "rather than accounting for dollars, schools should be held accountable for results."⁶⁸

One model for increasing accountability is the series of initiatives unleashed by the Kentucky Education Reform Act of 1990 (KERA). KERA was initiated after Kentucky's whole educational system and financing mechanisms were found unconstitutional. Thus, KERA addresses both spending inequities and restructuring.

Specifically, along with a 20 percent increase in the overall funding base for schools and a plan to have every school under school-based decision-making by 1996, KERA includes a variety of measures to enhance the accountability of individual schools, such as the following:

- An Office of Education Accountability, which verifies school performance, exercises sanctions against officials guilty of misconduct, and specifies school funding recommendations.
- Impact Evaluations—beginning in 1992, students in grades 4, 8, and 12 are tested every two years under a new performance-based assessment system that is keyed to 75 per-

⁶⁶See, for example, William L. Taylor testimony or Slavin in "After the Victory."

⁶⁷Chapter 1, enacted by Congress in 1965, channels resources to schools with large populations of poor children.

⁶⁸"Making Schools Work for Children in Poverty: A New Framework Prepared by the Commission on Chapter 1." Summary Report, Washington, D.C., December 1992.

formance outcomes. These and other performance measures are used to determine whether individual schools are successfully making progress toward achieving a set of six overarching goals.

While it is still early to assess fully such a massive restructuring effort, it appears that the KERA effort, which involves increased funding, combined with reform and greater accountability, may be on track. For instance, the Kentucky Institute for Education Research conducted three statewide surveys that polled the opinions of 954 school administrators and teachers and 535 parents and the general public regarding Kentucky's four-year-old reform initiative. Polling results showed that four of five school leaders and two of three teachers believe that schools have improved during this period. In addition, school professionals, as a whole, and school administrators, in particular, do not want to return to the way schools were before KERA.

New test data suggest that KERA has had a positive effect on learning as well. Kentucky's 4th, 8th, and 12th grade students demonstrated dramatic improvement on the 1993-94 version of the annual statewide educational tests. In these grades, the percentage of students performing at or above the proficient level in mathematics, reading, science, and social studies has increased.

In the end, this massive restructuring and increased investment in Kentucky's education system will not guarantee improved economic performance in the future. Yet, the evidence from both CFED's *Development Report Card for the States* and other scholarly work on the relation between investment in public services and economic development would indicate that Kentucky is on the right track. The state's enhanced investments in human capital, guided by KERA, improve the state's chances for future economic growth.

Responsiveness to Customer Needs: Increased investments in education should be focused on improving program quality by placing greater emphasis on the needs of customers.

Over the next decade, the United States must organize its education resources to prepare its young people of all races with the learning and social skills required for economic and civic success in an increasingly knowledge-based society. Furthermore, the skills demanded by today's and tomorrow's economy are increasingly different from the skills provided by the public education system of the past 30 years. Both what young people learn and the way they learn it will have to undergo substantial change if investments in education are to help young people meet the requirements of the new economy.

To succeed in accomplishing this lofty mission will not be easy. Additional experimentation in a host of areas will be needed:

- Introducing learning technology into schools necessary to enable K-12 pupils to pursue a substantial part of their learning on an individualized and customized basis
- Creating learning environments that treat the student as an active participant or worker and the teacher as coach, so that the students will be better prepared for today's work and civic settings
- Encouraging teachers, parents, administrators, and the private sector to establish new options such as "schools-within-schools" (and other approaches) that allow parents and teachers to choose the learning setting that best meets their and their children's needs
- Making progress on critical challenges,

such as lowering the dropout rate, smoothing the transition between school and work, and enhancing literacy, science, and mathematics skills

Performance-Based Management: Increased investment allocations in education should be based on performance.

Educational practices must be profoundly rethought if they are to work in the United States in the rest of this century and the beginning of the next. The old methods provide no solution. As Robert Woodson of the National Center for Neighborhood Enterprise, talking about another policy arena, put the matter: "If we keep on doing what we're doing, we're gonna keep on getting what we've got."⁶⁹

Yet, in our increasingly anti-tax and anti-government America, additional resources will not likely be forthcoming unless they are tied to performance in improving the quality of education. This is another aspect of accountability and involves clarifying what children should learn, designing assessments that accurately measure how well students are learning, improving information sharing about what works and does not, providing adequate resources so that teachers are able to help students meet expectations, and developing appropriate rewards and sanctions for schools for their performance.

Of course, determining how to measure performance is a difficult issue. Schools help students develop many different skills, and not all of them are easily measured. In order to insure the development of performance standards that are appropriate and that do not encourage teachers simply to help students "beat the test," school districts should consider developing performance measures in collaboration with teachers and school administrators.⁷⁰

One example of developing this kind of collaborative, performance-based management system can be found in the San Diego City Schools. Based on the recommendations of a Student Achievement Accountability Committee, the San Diego City Schools began implementing an accountability system in early 1993. This system consists of four primary elements: establishing standards, assessing performance, recognizing superior performance/intervening in the case of poor performance, and creating a public reporting process. As part of the standard-setting procedure, each school (including teachers, administrators, and other stakeholders) is involved in a process of identifying the particular standards against which it will be assessed. In return for high achievement, current plans call for outstanding schools to be "recognized" with an in-kind bonus of up to 30 days of staff development time.⁷¹

⁶⁹Measure By Measure: The South Will Lead the Nation, *Final Report of the 1992 Commission on the Future of the South* (Research Triangle Park, N.C.: Southern Growth Policies Board, 1993), p. 5.

⁷⁰See, for example, the *Carnegie Forum on Education and the Economy, A Nation Prepared: Teachers for the 21st Century* (New York: Carnegie Corporation, 1986), which recommended that parents, teachers, and the principal of each school agree on appropriate measures and then negotiate final standards in conjunction with the school board.

⁷¹For more information, see *Interim Report on the Implementation of Accountability at the Leadership in Accountability Demonstration (LAD) Schools, San Diego City Schools, Planning, Assessment and Accountability Division, January 17, 1995.*

CONCLUSION

The relationship between education spending and economic development is not a simple one, but rather one which involves a series of complex interrelationships. In exploring the connection between the two, we have come to the conclusion that there are no easy answers to the question of the impact of education spending on economic development.

On the one hand, it is clear that investments in education can have a significant impact on long-term economic health. Scholarly research has demonstrated a significant relationship between education spending and both future earnings (at the individual level) and overall economic growth (at the aggregate level). In addition, studies of business location decisions indicate that an educated work force is one of the most important site selection factors, especially for growing companies. Moreover, in an Information Age economy that increasingly places a premium on skilled workers, gross underfunding of education in certain districts has serious consequences for both the life chances of disadvantaged students and the overall quality of life in the larger community.

On the other hand, the on-going debate about the link between education spending and student achievement raises the issue of how efficiently education dollars are spent currently and whether education spending really "matters." While recent research cautions against a simplistic conclusion that "money doesn't matter," this research is equally clear in noting that simply investing more in education—without changes in the way education dollars are spent—will not alone lead to greater student outcomes.

Therefore, we conclude that a state's or region's economic health is best served by a common sense view that seeks out a "middle way"

between these two extremes. In other words, education spending must be increased, especially in poorer districts, if we are to provide all students with an equal opportunity to learn the skills required for success in the New Economy. Yet, to gain the maximum impact from increased education investments, whether the goal is to educate gifted students with world-class mathematics skills or to help disadvantaged students to finish school, these investments must be made wisely. Cities and states can make wise choices by looking at education spending as one of the most critical investments in long-term economic health.

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NATIONAL EDUCATION ASSOCIATION
1201 Sixteenth Street, NW
Washington, DC 20036-3290



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